

REMARKS

By the above amendments the subject matter of claims 17 and 22 have been incorporated into claims 13 and 18, respectively, claims 17 and 22 being cancelled as a result. In view of these actions and the following remarks, reconsideration of this application is requested.

The rejection of claims 13-15 and 18-21 has been rendered moot by the above indicated actions incorporating claims 17 and 22 into claims 13 and 18, respectively. Thus, this rejection should now be withdrawn and such action is requested.

Claims 17 and 22 were rejected under 35 USC § 103 as being unpatentable over the Sennoun et al. patent (hereafter, “Sennoun”) when viewed in combination with the Marchand et al. patent application publication (hereafter, “Marchand”).

As recognized by the Examiner, Sennoun does not disclose or suggest having a portion of the mixture produced in the oxidation zone supplied to the reforming zone in a manner bypassing the injection and mixture forming zone or any means for doing so. Thus, the Examiner has cited Marchand and has asserted that Marchand teaches the desirability of direct heat exchange of the catalyst and that would lead one of ordinary skill to provide Sennoun’s device and method with a bypass passage to allow the mixed gas stream to pass directly from the oxidation zone to the reforming zone to provide a faster heatup of the catalyst. However, it is submitted that the Examiner has over-generalized the teachings of Marchand and in doing so has mischaracterized what they might suggest to one of ordinary skill.

That is, according to Marchand additional oxidant can be fed during a start up phase at different points to accelerate the startup phase by exothermic reactions. In paragraph [0109] Marchand points out that this preheating is via an “additional direct heat source” that is not restricted by the thermal conductivity of the surrounding material. However, the disclosed manners of providing an “additional direct heat source” do not involve providing a bypass of the type disclosed and claimed by the present application. To the contrary Marchand describes very different means for providing an “additional direct heat source” in paragraph [0111] where it is described that such means can be provided by, for example:

the tops of the reformer tube(s) may be heated externally by combustion gases from the reformer burner. After the tops of the reformer tube(s) have reached a

suitable temperature, fuel and oxidant (and optionally, steam) are directed to the reformer tube(s). Ignition of the catalytic combustion reaction occurs when the reactant gases come into contact with the heated reformer tube walls near the top of the tube. By controlling the flow rate of the reactant gases, the reaction front can propagate back to the front portion of the bed, heating the entire catalyst bed. Other methods of heating at least a portion of the catalyst bed may also be suitable depending on the design and construction of the steam reformer. For example, a heating device, such as a resistive heating element, igniter, or glow plug could be placed within or near the catalyst bed, if desired.

None of these additionally heating means involve the use of a bypass, and they even could be said to teach away from such a use. Furthermore, Figs. 1 to 6 describe additional oxidant supplies at different entrance points near the different catalysts where the exothermic catalytic combustions take place. Such a showing by Marchand teaches something that resembles several injection and mixture forming zones and not the bypassing of a portion of the mixture produced in the oxidation zone according to prior claims 17 and 22, now amended claims 13 and 18, of the present patent application.

Providing a reformer and method as disclosed and claimed herein with the recited "bypassing feature" is particularly advantageous, since gas mixtures of different compositions can be transferred from the oxidation zone into the reforming zone. On this basis, different paths for the gas mixture from the oxidation zone to the reforming zone are available, namely, either via the injection and mixture forming zone or via various bypassing connections between the oxidation zone and the reforming zone. Transferring a gas mixture from an upstream point of the oxidation zone to a downstream point of the reforming zone has a different influence on the reforming than transferring a gas mixture from a downstream point of the oxidation zone to an upstream point of the reforming zone.

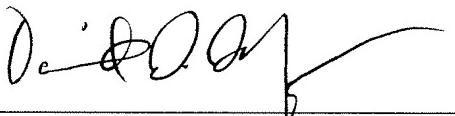
While it is recognized that the actions of other patent offices are not binding on the Examiner, it is indicative of the unobviousness of the present invention that the amended claims correspond substantially to the subject matter on which the German, Australian and Korean patents have already been granted.

For all of the above reasons, it is submitted that the § 103 rejection based upon the Sennoun and Marchand references should be withdrawn and action to that effect is requested.

Claim 16 was rejected under 35 USC § 103 as being unpatentable over Sennoun when viewed in combination with the Kudo et al. patent. However, since Kudo et al. have no teachings suggestive of applicants' claimed bypassing of the injection and mixture forming zone, and since this combination was not found to be applicable to claim 17 which is now incorporated into the independent claim from which claim 16 depends, this rejection is no longer relevant and should now be withdrawn.

Therefore, in the absence of new and more relevant prior art being discovered, this application should now be in condition for allowance and action to that effect is requested. However, while it is believed that this application should now be in condition for allowance, in the event that any issues should remain, or any new issues arise, after consideration of this response which could be addressed through discussions with the undersigned, then the Examiner is requested to contact the undersigned by telephone for the purpose of resolving any such issue and thereby facilitating prompt approval of this application.

Respectfully submitted,



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